APPENDIX D

STRESS AND FATIGUE REVIEW

STUDENT HANDOUT

United States Army School of Aviation Medicine
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STUDENT HANDOUT

TITLE: STRESS AND FATIGUE REVIEW

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TERMINAL LEARNING OBJECTIVE:

At the completion of this lesson the student will:

ACTION: Reduce the adverse effects of stress and fatigue on individual health, aviation safety, and mission completion.

CONDITION: While performing as a senior aircrew member.

STANDARD: In accordance with (IAW) FM 1-301, FM 26-2, the Leader's Guide to Crew Endurance, Flight Stress, Fundamentals of Aerospace Medicine, and DA PAM 600-24.

A. ENABLING LEARNING OBJECTIVE (ELO) #1:

ACTION: Select the definition of stress.

CONDITION: Given a list of definitions.

STANDARD: IAW FM 1-301.

a. Definition of stress – The nonspecific response of the body to any demand placed upon it.

(1) Hans Selye proposed this definition. He was an Austrian endocrinologist and the researcher that brought the concept of stress to public attention.

(2) Selye's definition is intentionally broad and points out that stress is a physiological or "body" response to some "demand" or challenge.

(3) Not all stress is dysfunctional. Stress, when appropriately managed, can build strength, endurance, and promote personal growth (e.g., the stress of a promotion). Whether stress will be functional or dysfunctional depends largely upon one's interpretation of the stressor and individual coping skills. These issues will be discussed further later in this lesson.

B. ENABLING LEARNING OBJECTIVE (ELO) #2:

ACTION: Select the responses to stress overload.

CONDITION: Given a list of stress responses.

STANDARD: IAW FM 1-301.

a. Physical responses to stress include both short- and longer-term responses:

(1) Short-Term Responses.

(a)Sweaty palms.

(b)Increased heart rate and blood pressure.

(c)Trembling.

(d)Shortness of breath.

(e)Gastrointestinal distress.

(2) Longer-term responses.

(a)Sleep problems.

(b)Backaches and other muscle aches.

(c)High blood pressure.

(d)Decreased immune response/ frequent illness.

(e) Fatigue.

b. Cognitive responses.

(1) Obsession/ excessive worrying.

(2) Decreased attention/ “Perceptual Tunneling.”

(3) Impaired memory.

(a) “Simplification Heuristic.” Tendency to oversimplify in recalling information for the problem-solving/decision-making process.

(b) “Stress-related Regression.” Tendency to forget recent learning and revert to old habits when faced with a stressful situation.

(4) Poor judgment.

(5) Poor perceptual-motor coordination.

c. Emotional responses to stress overload include:

(1) Irritability.

(2) Hostility.

(3) Anxiety/increase worrying.

(4) Loss of self-esteem.

(5) Feelings of helplessness.

(6) Loss of interest in pleasurable activities (anhedonia).

d. Behavioral responses.

(1) Late to work.

(2) Decreased motivation.

(3) Explosiveness/”acting out.”

(4) Alcohol abuse.

(5) Social isolation.

(6) Suicide.

C. ENABLING LEARNING OBJECTIVE (ELO) #3:

ACTION: Select the correct actions to prevent suicide.

CONDITION: Given a list of actions.

STANDARD: IAW DA PAM 600-24.

a. Danger signals for suicide risk are as follows:

(1) Talking about or hinting at suicide.

(2) Giving away possessions; making a will.

(3) Obsession with death.

(4) Specific plans to commit suicide and access to lethal means.

(5) Buying a gun.

(6) Previous suicide attempts.

(7) Major life events (i.e., divorce, death, job layoff, on-going relational problems).

(8) Difficulty with alcohol or history of other substance abuse.

b. Actions to be taken to prevent suicide in a co-worker are as follows:

(1) Talk to him/her supportively.

(2) Be direct. Don't "beat around the bush." If you suspect suicidal ideation, ask. Talking about suicide will not provoke it. Suicidal persons will most likely be relieved that someone is concerned. Admitting to suicidal ideation is often a cry for help, and failing to address the matter directly may have disastrous results.

(3) Ensure the soldier receives prompt medical attention.

D. ENABLING LEARNING OBJECTIVE (ELO) #4

ACTION: Match individual stress coping mechanisms with the four classes of stress coping mechanisms.

CONDITION: Given a list of coping mechanisms and the four classes of stress coping mechanisms.

STANDARD: IAW FM 1-301.

a. Avoid stressors.

(1) Most powerful technique. Involves avoiding stress or reducing exposure.

(2) Examples include good time management, training, good problem solving skills, and good nutrition and good cockpit communication.

b. Change your thinking.

(1) Focus on the here and now.

(2) Recognize the choices you make. Increase your sense of personal control.

(3) Avoid absolutes and perfectionism.

(4) Practice positive self-talk.

c. Learn to relax.

(1) The opposite of stress is relaxation. You can't be stressed and relaxed at the same time, so learn how to relax.

(2) Breathing, progressive muscle relaxation and other exercises.

(3) Pleasurable hobbies.

d. Find outlets to "let off steam."

(1) Exercise.

(2) Talk it out.

(a) Friend/family member.

(b) Flight surgeon or aeromedical physician assistant.

(c) Psychiatry, psychology, and social work.

(d) Chaplains.

(e)Drug and alcohol facilities.

E. ENABLING LEARNING OBJECTIVE (ELO) #5.

ACTION: Select the three categories of combat stress behaviors.

CONDITION: Given a list of categories.

STANDARD: IAW FM 22-51.

a. Positive combat stress behaviors.

(1) Heightened alertness, strength, and endurance.

(2) Strong personal bonding between soldiers.

(3) Pride of identification with unit and unit's history.

(4) Acts of courage and self-sacrifice.

b. Misconduct stress behaviors range from minor breaches of unit orders to serious UCMJ violations and perhaps violations of the Law of Land Warfare.

(1) Killing prisoners.

(2) Alcohol and drug abuse.

(3) Fratricide.

(4) AWOL.

c. Battle Fatigue.

(1) Ranges from normal, common signs experienced by many soldiers in combat to progressively more serious and less frequently observed warning signs that require immediate attention by the leader, medic, or buddy to prevent potential harm to the soldier, others, or the mission. Examples, in increasing severity, are as follows:

(a) Hyperalertness

(b) Fear, anxiety

(c) Physical stress complaints

(d) Loss of confidence

(e) Impaired duty performance

(f) Erratic actions, outbursts

(g) Freezing, immobility

(h) Impaired speech or muteness

(i) Impaired vision, touch, or hearing

(j) Weakness and paralysis

(k) Hallucinations, delusions

F. ENABLING LEARNING OBJECTIVE (ELO) #6.

ACTION: Match Battle Fatigue risk factors with corresponding leader actions that reduce the impact of each factor.

CONDITION: Given a list of risk factors and leader actions.

STANDARD: IAW FM 8-51.

a. RISK: Problems on the home front.

(1) ACTION: Foster strong family support group.

(2) ACTION: Ensure family care plans are in place pre-deployment.

(3) ACTION: Provide pre-deployment and redeployment information briefings to families.

b. RISK: First exposure to a major combat stressor.

ACTION: Tough, realistic training.

c. RISK: Lack of information to soldiers.

(1) ACTION: Keep yourself informed.

(2) ACTION: Keep soldiers informed.

d. RISK: Soldiers physically run-down.

(1) ACTION: Ensure the best water, food, equipment, shelter, sanitation, and sleep possible.

(2) ACTION: Explain why the hardship is necessary.

G. ENABLING LEARNING OBJECTIVE (ELO) #7.

ACTION: Select the four principles for treating Battle Fatigue.

CONDITION: Given a list of principles.

STANDARD: IAW FM 8-51.

a. Proximity. Treat the soldier as close to his unit as possible. If warning signs respond quickly to helping actions, continue to monitor the soldier until all signs resolve. The soldier will probably not need to be evacuated or relieved of his duties. If warning signs persist and/or worsen and interfere with the soldier's duty performance, medical treatment facilities can provide brief restorative treatment with an expected outcome of return to duty.

b. Immediacy. Treat the soldier as soon as possible after the stress reaction begins.

c. Expectancy. Instill the expectation that the soldier is going to improve rapidly and return to duty.

d. Simplicity. The intervention should be brief, supportive, and restorative ("3 hots and a cot"). Preferably, the soldier should remain in uniform and be given light work to keep active.

H. ENABLING LEARNING OBJECTIVE (ELO) #8.

ACTION: Select the definition of fatigue.

CONDITION: Given a list of definitions.

STANDARD: IAW FM 1-301, and Leader's Guide to Crew Endurance.

a. Fatigue is the state of feeling tired, weary, or sleepy that results from periods of anxiety, exposure to harsh environments, or loss of sleep.

b. Sleep deprivation, disrupted diurnal cycles, and stressful life events all play a role in producing fatigue and impairing performance.

I. ENABLING LEARNING OBJECTIVE (ELO) #9:

ACTION: Select the effects of fatigue on performance in the cockpit.

CONDITION: Given a list of effects.

STANDARD: IAW FM 1-301, and Leader's Guide to Crew Endurance.

a. Reaction time.

(1) Increases - slow and irregular.

(2) Decreases - impulsive and reactive.

(3) Not as smooth at the controls.

b. Attention is reduced.

(1) Overlook/misplace sequential task elements; inattention to minor but significant details.

(2) Preoccupation with single task or elements (“tunnel vision”).

(3) Impaired situational awareness.

(4) Less aware of poor performance - cognitive effects of fatigue are apparent BEFORE physical effects are felt.

(5) Reduced ability to remain task-focused, tendency to daydream or become non-task oriented, especially with more demanding tasks.

c. Memory is diminished.

(1) Impaired short-term memory. Difficult to process and integrate new information.

(2) Ability to assimilate new learning into long-term memory is compromised.

d. Poor and careless performance.

e. Greater tolerance for error.

f. Impairments in communication, cooperation and crew coordination.

(1) Sending messages - conversation may become fragmented, repetitive and less specific. Speech may become slowed, slurred and/or lower in tone (less audible).

(2) Receiving messages - misinterpretation occurs more easily.

(3) Overall increased potential for error in communicating critical mission, flight, or safety information.

J. ENABLING LEARNING OBJECTIVE (ELO) #10.

ACTION: Select the characteristics of the body’s diurnal rhythms.

CONDITION: Given a list of effects of diurnal (or circadian) rhythms.

STANDARD: IAW Leader’s Guide to Crew Endurance.

a. We have an intrinsic biological clock with a cycle of roughly 24-25 hours.

b. Many important bodily functions cycle along these diurnal rhythms.

(1) Core body temperature.

(2) Alertness.

(3) Heart rate.

c. Performance varies with these cycles. Given the typical circadian cycle, performance peaks between 0800 and 1200 hours, declines slightly between 1300 and 1500, then increases between 1500 and 2100, and finally declines from 2200 to 0600.

d. While the body clock is inherently capable of monitoring the passage of time, it differs from most clocks in that it is flexible and must be set, or synchronized, before it can accurately predict the timing of events. External synchronizers or "Zeitgebers" (German word meaning literally "time givers") are:

(1) Sunrise/sunset.

(2) Ambient temperature.

(3) Meals/Social cues.

K. ENABLING LEARNING OBJECTIVE (ELO) #11.

ACTION: Select the definition of circadian desynchronization ("jet lag").

CONDITION: From a list.

STANDARD: IAW Leader's Guide to Crew Endurance.

a. Circadian Desynchronization ("Jet lag"). Rapid travel from one time zone to another causes the body to resynchronize its diurnal rhythms to the local geophysical and social zeitgebers. Until intrinsic rhythms are reset, sleep disorders and fatigue will prevail.

(1) Eastward travel shortens the day.

(2) Westward travel lengthens the day.

(3) Resynchronization occurs much more rapidly when traveling west.

b. Shift work can have effects similar to crossing time zones due to the changes in light exposure and activity times.

L. ENABLING LEARNING OBJECTIVE (ELO) #12.

ACTION: Select the factors that determine the sleep required by the average aircrew member.

CONDITION: Given a list of factors.

STANDARD: IAW Leader's Guide to Crew Endurance.

a. Individuals cannot accurately determine their own impairment from sleep loss, as discussed earlier with respect to the effects of fatigue in the cockpit.

b. The average person sleeps 7 to 9 hours per day.

c. Sleep length can be reduced 1 to 2 hours without performance decrement over an extended period. Once the period ends, however, the individual must return to their normal sleep length.

d. 5 hours per night is the absolute minimum for continuous operations (i.e., a period of about 14 days of continuous operations).

e. Some individuals may tolerate as little as 4 hours per night for short periods (up to 1 week), but there is no easy way to determine who will function best with the least sleep.

f. Sleep restriction decisions/crew endurance planning should consider:

(1) Complexity of the job tasks performed by the individual.

(2) Potential for loss from errors committed due to fatigue.

(3) Individual's tolerance to sleep loss.

M. ENABLING LEARNING OBJECTIVE (ELO) #13.

ACTION: Select the strategies for preventing fatigue.

CONDITION: Given a list of strategies.

STANDARD: IAW FM 1-301, FM 26-2, Fundamentals of Aerospace Medicine, and Leader's Guide to Crew Endurance.

a. Scheduled appropriate sleep periods.

b. Prevent/control desynchronosis by maintaining consistent schedules of sleep, daylight exposure, and naps.

c. Control the sleeping environment.

(1) Sleep in darkness or use a sleep mask.

(2) Control noise disruptions. Use masking noise or wear earplugs.

(2) Control room temperature (keep cool).

d. Build endurance through physical conditioning and good stress management.

e. Napping.

(1) When sleep is not available or shortened by operational concerns, naps are a viable alternative.

(2) Naps as short as 10 minutes are restorative.

(3) Longer naps (greater than 1 hour) may result in a period of sluggishness ("Sleep Inertia") for 5-20 minutes after awakening.

(4) Best to nap when body temperature is low (around 0300 and 1300).

(5) Practice napping.

N. ENABLING LEARNING OBJECTIVE (ELO) #14.

ACTION: Select the appropriate treatments for fatigue.

CONDITION: Given a list of treatments.

STANDARD: IAW FM 1-301, and Leader's Guide to Crew Endurance.

a. Get adequate rest and natural sleep (not drug-induced). Alcohol is the #1 sleep aid in the United States, but it suppresses REM sleep.

b. Use fans to keep the room temperature cool, and maintain a sleeping environment that is quiet and dark. These measures will help ensure good quality sleep.

c. Avoid any activities in bed other than sleep and sex, as they may actually come to interfere with your ability to fall asleep over time.

d. Nutrition

(1) Practice moderation in everything you eat.

(2) Avoid caffeine, especially close to the sleep period.

e. Rotate duties to avoid boredom.

f. Pace yourself and avoid heavily task-loaded activities, those requiring short-term memory, or those demanding prolonged or intense mental activity.

g. Limit work periods and delegate responsibility. If possible, suspend activity during periods when fatigue is higher and efficiency is lower (e.g., during the natural circadian trough between 1300 and 1500 hours).

h. Remove yourself from flying duties when fatigue affects safety of flight.